

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 800254WO	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/FI02/00743	International filing date (<i>day/month/year</i>) 18.09.2002	Priority date (<i>day/month/year</i>) ---	
International Patent Classification (IPC) or national classification and IPC ₇ H04Q 7/38, H04Q 7/22			
Applicant Nokia Corporation et al			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 02.05.2003	Date of completion of this report 10.12.2003
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Peter Hedman /OGU Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI02/00743

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
pages 1-17, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☒ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under article 19
pages _____, filed with the demand
pages 18-21, filed with the letter of 15.10.2003
- ☒ the drawings:
pages 1-6, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-21</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-21</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-21</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The claimed invention relates to a method, system and entities necessary to improve the flexibility of subscriber data management in a communications network, preferably a mobile communications network.

In the international search report the following documents were cited and are considered to be of relevant importance:

D1 EP 1 065 904 A1
D2 EP 0 762 714 A2
D3 WO 99 27724 A1
D4 WO 01 31952 A1

In D1, which represent the most relevant prior art, a location registration system for a mobile communications system is described. Upon receiving an incoming call, a Gateway Mobile Switching centre (GMSC) interrogates a Home Location Register (HLR) for information necessary for routing the call. The HLR interrogates a Visitor Location Register (VLR2), requesting VLR2 whether it has sufficient information for routing purposes stored therein. If information is missing, an answer is sent to HLR from which sufficient routing information is forwarded to VLR2. As long as the called subscriber is located in the present location area, subsequent signalling will be forwarded in association with the information stored in VLR2 (See page 2, line 58-page 3, line 11; page 3, line 22-page 4, line 1; page 8, line 9-55; page 9, line 23-36; abstract).

D2 describes a passive information access system, in which a portion of relevant subscriber information is forwarded from a database to a subscriber when the subscriber turns active. The received information is passively displayed on a display or announced by a voice activator. The portion of information to

.../...

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box V.

be displayed can be specified in advance by the subscriber (See column 2, line 38-49; column 3, line 59-column 4, line 16; column 6, line 44-56).

D3 relates to a procedure for supporting roaming subscribers with access to stored data. A roaming subscriber may request for the establishment of a local mailbox. When this request has been accepted and confirmed to the subscriber by the network, data messages stored in the home mailbox of the subscriber is transferred to the local mailbox. Since the HLR/VLR entities described in D1 provide services to roaming subscribers it is considered obvious to the person skilled in the art to combine the distributed mailbox service described in D3 with the system, including an updating procedure, which is described in D1, in order to come up with a method comparable to the one suggested in claim 15. This method therefore fails to involve an inventive step.

In view of what is proposed in the amended claims, D4 only disclose general state of the art.

The invention defined in the amended claims 1-21 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method, system and entities for selectively routing signalling based on the state (active/inactive) of the subscriber. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-21 is novel and is considered to involve an inventive step. The invention is industrially applicable.

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 14 is "dependent on claim 10 or any claim dependent on claim 10". This expression include claims 15,16 and 18. A dependent claim shall only depend on claims preceding the dependent claim (See PCT Art. 6).

Claims

1. A method of managing subscriber data in a communications network, the method comprising:
- 5 sending a message associated with a subscriber and including data relating to the identity of said subscriber;
- selectively routing said message based on the identity of said subscriber and on routing information stored at a register, to one of a first network entity and a second network entity wherein said message is routed to
- 10 the first network entity when it is determined that the subscriber is inactive and to the second network entity when it is determined that the subscriber is active
- subsequent to receiving said message at the first network entity, provisioning a second network entity with subscriber data required by said second network entity to be able to service said subscriber; and
- 15 updating routing information associated with the subscriber at the register to route subsequent signalling to the second network entity.
2. A method as claimed in claim 1 further comprising:
- storing a plurality of subscriber identities at the first network entity; and
- 20 provisioning the second network entity with subscriber data if the data relating to the identity of the subscriber in the message corresponds to one of said plurality of subscriber identities.
3. A method as claimed in claim 1 wherein the message is sent from a mobile
- 25 station of the subscriber.
4. A method as claimed in claim 3 wherein the message includes International Mobile Subscriber Identity (IMSI).
- 30 5. A method as claimed in claim 3 or 4 wherein the message further includes data relating to the location of the mobile station.

6. A method as claimed in any of claims 3 to 5, comprising sending data from the first network entity to the mobile station, to provide the subscriber with a preliminary service.
- 5 7. A method as claimed in claim 6 wherein said data sent from the first network entity to the mobile station further comprises authentication information.
8. A method as claimed in claims 6 and 7 wherein said preliminary service
10 comprises transmitting a notification message to the mobile station to notify the subscriber that a service request has been acknowledged.
9. A method as claimed in claim 8 wherein said notification message comprises a voice announcement.
- 15 10. A method as claimed in any preceding claim wherein the message is sent to the register via a second register.
11. A method as claimed in any preceding claim wherein the register
20 comprises a service routing register.
12. A method as claimed in any preceding claim wherein the first network entity comprises a provisioning home location register (pHLR).
- 25 13. A method as claimed in any preceding claim wherein the second network entity comprises a home location register (HLR).
14. A method as claimed in claim 10 or any claim dependent on claim 10 wherein said second register comprises a visitor location register (VLR).
- 30 15. A method as claimed in any of claims 1 to 12, wherein the second network entity comprises one of: a voicemail system entity; a mail server entity; a multimedia messaging server entity; a wireless application part gateway entity;

a prepaid server entity; intelligent network server; short message service centre; location based service centre; USSD-centre; GPRS-server; charging and rating server.

- 5 16. A method as claimed in any preceding claim, comprising provisioning at least one further network element with subscriber data.

17. A method for managing subscriber data in a communications network, the method comprising:

- 10 determining that a subscriber has become inactive in at least one network entity arranged to provide subscriber data for use in servicing the subscriber;

creating a profile relating to the subscriber at an auxiliary network entity;

updating the information stored at a routing register to route subsequent

- 15 signalling associated with the subscriber to the auxiliary (pHLR) network entity; and

deleting a profile relating to the subscriber data from the at least one network entity.

- 20 18. A method as claimed in claim 17 further comprising determining that a subscriber has become inactive if the time lapsed since a last message, associated with the subscriber, was routed exceeds a predetermined time.

19. A communication system for servicing subscribers, comprising:

- 25 a first network entity for storing subscriber data for inactive subscribers;

a second network entity for storing subscriber data required for enabling service profiles for subscribers of the communication system;

- a register for providing routing information for routing messages associated with subscribers and selectively routing a message based on the subscribers identity and on routing information stored at said register, to one of
30 the first network entity and the second network entity wherein said message is routed to the first network entity when it is determined that the subscriber is

inactive and to the second network entity when it is determined that the subscriber is active;

means for provisioning the second network entity with subscriber data associated with a subscriber to be activated and stored at the first network entity based on a message including information relating to the identity of said subscriber, the arrangement being such that the subscriber is activated by provisioning the second network entity with subscriber data from the first network entity and by updating routing information associated with said subscriber at the register to route subsequent signalling associated with said subscriber to the second network entity.

20. A subscriber data management entity for a communications network, said subscriber data management entity being arranged to store subscriber data for inactive subscribers, to receive a message identifying an inactive subscriber to be activated and to provision at least one other entity of the communication network with subscriber data associated with the inactive subscriber to be activated based on the received message.

21. A register for a communications network, said register being arranged to store routing information relating to the identity of a plurality of subscribers, to route signalling associated with active subscribers to a second network entity and to route signalling associated with inactive subscribers to a first network entity and to update routing information for at least one of said plurality of subscribers to route signalling to the second network entity when said at least one of said plurality of subscribers becomes active.